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Karl W. Butzer

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and the courses, distances and coastal observations of the Cabot records. It is possible to disagree with some of the author's conclusions, the location of John Cabot's landfall in 1497, for example. Nevertheless, the discussion of the *La Cosa* map is considered by Mr. Layng to be « one of the most brilliant ever written ».

Crucial Maps should be of great value to historical geographers, not only for its elaboration of XVI[th] century exploration of the Atlantic coast but also for the insight it gives into techniques of interpreting historical maps.

W. Gillies Ross,
Bishop's University.

BIOGÉOGRAPHIE

YOUNGBERG, Ch. T., 1965. **Forest-Soil Relationships in North America,** Oregon State University Press, Corvallis, XII + 532 pages, 134 figures, 91 tableaux 16×23½ cm. Rel. U. S. $8.00.

Il s'agit d'un recueil de 35 contributions présentées à la deuxième conférence nord-américaine sur les sols forestiers, tenue en août 1963 à l'université de l'état de l'Oregon à Corvallis.

Les textes concernent la physique, la chimie, la fertilité et la biologie des sols ainsi que les relations multiples entre ceux-ci et la végétation forestière, touchant par là au problème de la productivité des stations et de son évaluation. Les aménagistes seront intéressés d'y trouver les comptes-rendus des recherches du Service forestier et du Service de conservation du sol américain et des programmes conjoints fédéraux-provinciaux canadiens touchant les problèmes de la classification des terrains et ceux de l'aménagement du territoire. Selon que l'on a tenu compte du sol seul, du sol et du *landform*, du sol et de la végétation et, enfin, du sol, du *landform* et de la végétation, un nombre de plus en plus grand de spécialistes y ont participé, ouvrant la voie à une collaboration interdisciplinaire étroite, perspective dont on ne peut que se réjouir.

Appuyé sur 483 références bibliographiques et complété par une liste de noms latins et vernaculaires des plantes ainsi que par un index des sujets, le volume *Forest-Soil Relationships in North America* permet d'entrevoir la complexité des problèmes touchant les relations entre les sols et la végétation et, dans bien des cas, de comprendre les causes profondes qui régissent la répartition et le succès relatif des végétaux à la surface du sous-continent nord-américain. Il peut, par conséquent, intéresser tous ceux qui sont préoccupés par les problèmes d'écologie végétale et de phytogéographie au sens large.

Miroslav M. GRANDTNER

ELHAÏ, Henri. **Biogéographie : les paysages végétaux au Quaternaire en Europe occidentale,** Centre de Documentation universitaire, Paris, 1964. 121 pp., 30 fig., 3 tables.

This *cours de Sorbonne* outlines the vegetation of France and neighboring countries during the course of the Quaternary, emphasizing the floras or pollen diagrams corresponding to the major stratigraphic units. Following a brief introduction, the major Pliocene floras are outlined, supplemented by maps, showing the modern distributions of Arcto-Tertiary or tropical genera once present in the European record. The Pliocene climate of western Europe is thought to have been moist and warm. On the other hand, during the Villafranchian repeated cold-climate oscillations led to a gradual impoverishment of the Tertiary floras. The distinctive pollen diagrams of the major interglacials (Cromerian, Holsteinian, Eemian) are illustrated in part, followed by an outline of vegetation change during the course of the last Würm glacial. Finally the classical Postglacial pollen zones are discussed with examples.

As could be expected from a lecture course, Elhai's style is concise and succinct, emphasizing facts. Yet the choice of words is vivid, making the book easy to read. Fortunately, too, the stratigraphic framework employed is basic and non-parochial. As a ready reference on palæobotanical information, Elhai's treatise is quite useful. From the plant geographer's

viewpoint, it will prove disappointing, however. The built-in bias of a pollen spectrum is never discussed, so, for example, overrepresentation or selective preservation of species. The student is unfortunately left with the impression that pollen data provide absolute information on vegetation, which is decidedly not the case. Similarly the concepts of variable rates of migration, of plant succession and of edaphic factors are never introduced nor considered. All vegetation change is directly ascribed to climatic variation. A similar simplistic view is apparent in the outline of Postglacial vegetation, both in terms of natural change through time and in the effects of man on the plant cover. Regrettable, too, is the absence of many basic pollen diagrams from England, German, Switzerland and Spain. As a bio-geography, this book does not live up to its title. Instead it is a stratigraphic summary of palæobotanical information.

Karl W. BUTZER

GRESSITT, J. Linsley. **Pacific Basin Biogeography : A Symposium.** Bishop Museum Press, 1963. 561 pp.

This volume comprises the papers of members of an intersectional symposium and an interdivisional symposium organized by the Division of Zoology and Entomology of the Tenth Pacific Science Congress held in Honolulu, August-September, 1961.

Biogeography, the elucidation of geographical aspects of the spread, evolution, and relationships of fauna and flora, involves the study not only of present distributions and affinities of plants and animals, but also the history and development of the distribution of life. The Pacific Basin affords an unusual opportunity for learning about processes of development and the evolution of living things. Among many factors which make it unique are that it is a major feature of the earth's surface, presents an enormous range of geological and geographical environments, and exhibits some of the more spectacular examples of evolution.

The forty-five papers in this volume deal with a wide range of topics from the fleas of Alaska to beavers, bears and other recent holarctic mammals. The distributions of insects, birds and other fauna are discussed, and the dispersal phenomena of plants. An attempt is made to measure the different kinds of barriers for some of them. The papers summarize information or shed new light on different phases of the story of the biogeography of the Pacific Basin. They elucidate the distribution, evolution, relationships and inter-relationships of the flora and fauna, especially in regard to their geographical aspects. Two articles are by geographers, a short one (3 pages) in the field of physical geography and the other, an exhaustive treatise (24 pages), deals with the palæogeography of the tropical Pacific. The subdivisions of the latter deal with topography and structure, marine sediments of the tropical Pacific, fossil and radioactive evidence for age dating, fossil evidence for faunal migration, geologic history of the central Pacific, structural evolution, coral atolls and palæoclimatology. Those various aspects of the discussion indicate how research in the palæogeography of the tropical Pacific has been of considerable interest and importance to several other scientific disciplines, especially to geology, botany, zoology and geography. The article is illustrated by five helpful maps and a table.

The section on coral atolls points out discoveries that have solved the problem of coral-reef genesis in the central Pacific. The great coral and algal structures are caps on the tops of volcanic seamounts which were either individual peaks or peaks on submarine ridges. The seamounts or islands subsided slowly enough for the growth of algae and coral to keep pace with the sinking to form the modern atolls. The dating of fossil material discussed in the paper indicates that the atolls of the central Pacific began to grow at the surface in the Late Cretaceous and Early Tertiary geologic periods.

This collection of papers by outstanding scientists is backed up by photographs, sketch maps, tables, literature cited and an author index. The volume will occupy an important place in any library which has to do with the biogeography of the Pacific Basin.

John Wesley COULTER